

**Translation**

Rec'd PCT/PTC

11 FEB 2005

PCT/JP2003/009705

PATENT COOPERATION TREATY



**PCT**

**INTERNATIONAL PRELIMINARY EXAMINATION REPORT**

(PCT Article 36 and Rule 70)

|   |   |   |
|---|---|---|
| Applicant's or agent's file reference<br>103177-WO-00                                       | <b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416) |   |
| International application No.<br>PCT/JP2003/009705  | International filing date (day/month/year)<br>30 July 2003 (30.07.2003)   | Priority date (day/month/year)<br>13 August 2002 (13.08.2002) |
| International Patent Classification (IPC) or national classification and IPC<br>C04B 35/581 |   |   |
| Applicant<br>SUMITOMO ELECTRIC INDUSTRIES, LTD.   |   |   |

|   |  |
|---|--|
| <p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>3</u> sheets, including this cover sheet.</p> <p><input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of <u>28</u> sheets.</p>  |  |
| <p>3. This report contains indications relating to the following items:</p> <p>I <input checked="" type="checkbox"/> Basis of the report</p> <p>II <input type="checkbox"/> Priority</p> <p>III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p>IV <input type="checkbox"/> Lack of unity of invention</p> <p>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p>VI <input type="checkbox"/> Certain documents cited</p> <p>VII <input type="checkbox"/> Certain defects in the international application</p> <p>VIII <input type="checkbox"/> Certain observations on the international application</p> |  |

|   |  |
|---|--|
| Date of submission of the demand<br>15 December 2003 (15.12.2003) | Date of completion of this report<br>10 August 2004 (10.08.2004) |
| Name and mailing address of the IPEA/JP                           | Authorized officer   |
| Facsimile No.   | Telephone No.  |

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/JP2003/009705

## I. Basis of the report

## 1. With regard to the elements of the international application:\*

- ☐ the international application as originally filed
- ☒ the description:  
pages 1, 3, 14, 16, 17, 22-24, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages 4-13, 15, 18-21, 25 (19.03.04), 2, 26-33, filed with the letter of 14 July 2004 (14.07.2004)
- ☒ the claims:  
pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, as amended (together with any statement under Article 19  
pages \_\_\_\_\_, filed with the demand  
pages 1, 23-33, filed with the letter of 14 July 2004 (14.07.2004)
- ☐ the drawings:  
pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description:  
pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

## 2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

## 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☒ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☒ the claims, Nos. 2-22
- ☐ the drawings, sheets/fig \_\_\_\_\_

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP03/09705

**Box No. V** Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

|                               |        |          |     |
|-------------------------------|--------|----------|-----|
| Novelty (N)                   | Claims | 1, 29-33 | YES |
|                               | Claims | 23-28    | NO  |
| Inventive step (IS)           | Claims | 1, 29-33 | YES |
|                               | Claims | 23-28    | NO  |
| Industrial applicability (IA) | Claims | 1, 23-33 | YES |
|                               | Claims |          | NO  |

## 2. Citations and explanations (Rule 70.7)

Document 1: JP, 11-174875, A (SUMITOMO ELECTRIC INDUSTRIES, LTD.), 02 July 1999

Document 2: JP, 2002-68849, A (SUMITOMO ELECTRIC INDUSTRIES, LTD.), 08 March 2002

Document 3: JP, 1-282157, A (MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.), 14 November 1989

## Claims 23-28

Comparing this application's invention to the ceramic heater (= cited invention) described in document 1 cited in the ISR, they differ with regard to setting numerical limits for the sintered compact substrate's "warping height (= flatness)."

Considering this, according to the description in this application's specification (page 4, lines 3-8; page 19, lines 8-14) the aforesaid flatness is a value suitable for screen printing an electrode on a substrate, and it appears that this can easily be accomplished by surface-polishing a thick sintered compact. This being the case, the cited invention too, manufactured by screen printing, can be understood as one that uses a substrate with about the same flatness.

Therefore this application's invention is substantially the same as the cited invention and is not novel and does not involve an inventive step.

Furthermore, "the magnitude of the polishing allowance" differs according to manufacturing process, not according to the manufactured object.

## Claims 1, 29-33

Document 2 cited in the investigation report describes controlling bending by sintering a green sheet with surface area 100 cm<sup>2</sup> or more and thickness 1 mm or less on a boron nitride jig with thickness 2 mm or greater, and document 3 cited in the investigation report describes preventing warping of a large-size ceramic substrate by sintering a green sheet while it is housed in a tray-like jig formed with a recess.

Nevertheless, there are no publicly known documents that describe or suggest making the natural drying time after forming a sheet 10 hours or longer, or making the volume ratio of a compact to the sintering jig space 20~60%.

On the other hand, the present application's invention appears to produce a large-area substrate with excellent flatness in the sintered state by setting the drying time and volume ratio in the aforesaid ranges.

Therefore the present application's invention is novel and involves an inventive step.